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CLAIMS

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[Claim(s)]

[Claim 1] In the laminating bottle joined in the joint of the inside layer the laminating of the exfoliation of was mutually made possible, and an outside layer to which it has two-layer at least, and a part of this inside layer and outside layer extend along the direction of an axis the alienation measured along the hoop direction of two joints which said joint is mutually estranged to a hoop direction, is prepared in it three or more, and adjoin each other mutually -- with a dimension The laminating bottle with which the dimension which measured between the two joints concerned linearly via the shaft center of a laminating bottle is characterized by being mostly set as this dimension.

[Claim 2] The laminating bottle according to claim 1 characterized by preparing at least one vent between joints, respectively at said outside layer.

[Claim 3] The laminating bottle according to claim 1 characterized by the shape of a cylinder being prepared in nothing and said joint by three hoop direction regular intervals.

[Claim 4] The laminating bottle according to claim 1 characterized by rectangle tubed being prepared in nothing and said joint by four hoop direction regular intervals.

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DETAILED DESCRIPTION

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## [Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the laminating bottle which an inside layer exfoliates and contracts from an outside layer with reduction in contents.

[0002]

[Description of the Prior Art] There are some which were indicated by JP,4-339759,A by which these people applied previously and application public presentation was already carried out as this kind of a laminating bottle, JP,5-310265,A, etc.

[0003] The laminating of the exfoliation of an inside layer is made possible inside the outside layer, a part of outside layer and inside layer are joined, and this laminating bottle is constituted. Although many things are considered about the installation location of the joint which joins an outside layer and an inside layer, there are some which prepared the joint in a straight line along the direction of an axis of a laminating bottle as the one gestalt.

[0004]

[Problem(s) to be Solved by the Invention] Drawing 6 is the cross-sectional view of the laminating bottle 30 which has only one joint 33 linearly prolonged along the direction of an axis. In this case, when the inside layer 32 exfoliates from the outside layer 31 with reduction in contents, exfoliation begins from the part distant from the joint 33. And if contraction of the inside layer 32 advances, the inside layer 32 which exfoliated as shown in drawing 6 will stick to the about 33-joint inside layer 32, and will form closed space 34 and 35 in the both sides of this adhesion part.

[0005] Thus, when closed space 34 and 35 was generated, there were a closed space 34 and a possibility of remaining without carrying out teeming of the contents in 35, and it was uneconomical.

[0006] Moreover, although the opening cylinder part of a laminating bottle is equipped with a teeming pump (not shown) and the siphon of a teeming pump was made to insert into an inside layer from an opening cylinder part with this kind of laminating bottle in many cases, when the inside layer which exfoliated contracted as mentioned above, the inside layer barred push bending and the actuation of a teeming pump with this normal for the siphon, and there was a case where it had a bad influence on teeming of contents.

[0007] This problem is similarly produced, when a hoop direction is countered and two joints linearly prolonged along the direction of an axis are prepared. Thus, it is because exfoliation of an inside layer will begin from an either side, and will advance and both sides will not exfoliate and contract to coincidence, although an inside layer will be carried out 2 \*\*\*\*s if two joints are prepared. Thus, why exfoliation begins only from one side Generally, although it is because thickness deviation of the inside layer is carried out to the hoop direction and it is easier to exfoliate rather than a heavy-gage side from an outside layer a thin meat side, and it is difficult to arrange a joint at equal intervals correctly and a dimension error is produced a little in a hoop direction when preparing two joints in a hoop direction It is because it is easy to exfoliate then from an outside [ one / where the one where hoop direction die length is longer is shorter ] layer.

[0008] This invention is made in view of the trouble of such a Prior art, and it aims at offering the laminating bottle which can pour out contents to the last. Moreover, other purposes of this invention are to obtain the laminating bottle which does not bar normal actuation of a teeming pump.

[0009]

[Means for Solving the Problem] This invention adopted the following means, in order to solve said technical problem. In the laminating bottle joined in the joint of the inside layer to which the laminating of the exfoliation of this invention was mutually made possible, and an outside layer to which it has two-layer at least, and a part of this inside layer and outside layer extend along the direction of an axis the alienation measured along the hoop direction of two joints which

said joint is mutually estranged to a hoop direction, is prepared in it three or more, and adjoin each other mutually -- with a dimension The dimension which measured between the two joints concerned linearly via the shaft center of a laminating bottle is the laminating bottle characterized by being mostly set as this dimension (it corresponds to claim 1).

[0010] ~~With the laminating bottle of this invention, when an inside layer exfoliates and contracts from an outside layer with reduction in contents, an inside layer is divided into the number and the same number of a joint, exfoliates and is contracted. It is decided by thick distribution of an inside layer, or difference of the hoop direction die length between joints whether exfoliation will begin from which partition of an inside layer, and if contraction of the inside layer of the partition which exfoliated first is completed, exfoliation of another partition will start and exfoliation and contraction will be performed one by one.~~

[0011] Since the dimension between joints is set up as mentioned above, in the middle of each partition, as for each partition of the inside layer divided by the joint, the section ends contraction, when [ of a laminating bottle ] it arrives at a shaft center mostly, and the contraction beyond this becomes impossible on a dimension.

[0012] ~~Also when the siphon of a teeming pump is allotted to the shaft center of a laminating bottle, the contracted inside layer pushes a siphon and does not bend it.~~

[0013] ~~It is desirable to prepare at least one vent between the joints of said outside layer, respectively (it corresponds to claim 2). If it does in this way, air can be made to be able to flow certainly between an outside layer and an inside layer from a vent, and an inside layer can be shrunk certainly and smoothly. The installation locations of a vent may be which locations, such as an opening cylinder part of a laminating bottle, a drum section, and a pars basilaris ossis occipitalis.~~

[0014] When a laminating bottle makes the shape of a cylinder, said joint is prepared in three hoop direction regular intervals (it corresponds to claim 3). ~~When a laminating bottle makes rectangle tubed, said joint is prepared in four / hoop direction regular intervals (it corresponds to claim 4).~~

[0015] <Raw material of this invention> ~~An outside layer can be constituted from high density polyethylene, and an inside layer can be constituted from nylon and can constitute a joint by joining an outside layer and an inside layer by the trade name "ADOMA" for example, by Mitsui Petrochemical Industries, Ltd.~~

[0016] In addition, when nylon is adopted as an inside layer, moisture permeability of nylon is possible also for carrying out the laminating of the layers ("ADOMA" etc.) which consist of other resin which is rich in gas barrier nature inside nylon, considering as an inside layer, since it is high, and making the moisture permeability of an inside layer decrease.

[0017] ~~However, the raw material of the adhesives for forming a joint, an outside layer, and an inside layer is not restricted to the above-mentioned example.~~

[0018]

[Embodiment of the Invention] Hereafter, the gestalt of operation of this invention is explained based on the drawing of drawing 5 from drawing 1.

[0019] [Gestalt of the 1st operation] Drawing 3 is an appearance perspective view in the gestalt of operation of the 1st of the laminating bottle by this invention, and drawing 1 and drawing 2 are the cross-sectional views of the drum section.

[0020] The laminating bottle 1 is equipped with the cylinder-like drum section 2 and the opening cylinder part 3 of the shape of a cylinder which stands in a row in the upper part of a drum section 2. The whole carries out the laminating of the outside layer 11 and the inside layer 12, and the laminating bottle 1 is constituted until it results [ from the opening cylinder part 3 ] in the pars basilaris ossis occipitalis 4 of a drum section 2. ~~Although mutually joined in three joints 13A, 13B, and 13C by parts other than these joint 13, exfoliation of the outside layer 11 and the inside layer 12 is attained only by the outside layer 11 and the inside layer 12 having contacted. Drawing 2 shows the condition before the inside layer 12 exfoliates from the outside layer 11.~~

[0021] The joint 13 is allotted to three hoop direction regular intervals, each joints 13A, 13B, and 13C were linearly prolonged in band-like along the direction of an axis of the laminating bottle 1 until they resulted [ from the tip of the opening cylinder part 3 ] in the margo inferior of a drum section 2, and it is prolonged to the core of a pars basilaris ossis occipitalis 4.

[0022] Dimensions L1 are  $L1 = \pi D / 3 = 1.05D$ . by the way, the alienation measured along the hoop direction of two adjacent joints (for example, 13A and 13B) when the outer diameter of the inside layer 12 was set to D -- With dimension  $L2 = D$  which measured linearly between the two joints (13A, 13B) concerned via the shaft center P of the laminating bottle 1, this has this dimension mostly. This dimension relation is the same also between joint 13B and 13C or about between joint 13C and 13A.

[0023] Every one vent 14 is formed in the outside layer 11 in the opening cylinder part 3 of the laminating bottle 1 between each joint 13 and 13, respectively. The vent 14 has penetrated only the outside layer 11 and has not penetrated it in the inside layer 12.

[0024] With this laminating bottle 1, it equips with the teeming pump which is not illustrated to the opening cylinder part 3, and the siphon of a teeming pump is inserted into the inside layer 12 from the opening cylinder part 3, a pump-rise is carried out and the contents held in the interior of the inside layer 12 are poured out. At this time, it is common to allot [ of the laminating bottle 1 ] the siphon of a teeming pump mostly to a shaft center.

[0025] The inside layer 12 exfoliates and contracts from the outside layer 11 with reduction of the contents in the inside layer 12. By the way, the inside layer 12 is trichotomized by the joint 13 in the hoop direction, and for every divided partition, it sequential-exfoliates and comes to contract it.

[0026] It is decided by thick distribution of the inside layer 12, or the dimension error of a joint 13 and the hoop direction die length between 13 whether exfoliation and contraction will begin from which partition of the inside layer 12, and other partitions do not exfoliate and it does not contract until the partition which exfoliated first completes contraction.

[0027] For example, joint 13B, inside layer 12B located between 13C, joint 13C, and inside layer 12C located among 13A do not exfoliate from the outside layer 11 until this inside layer 12A will end contraction, supposing joint 13A and inside layer 12A located among 13B exfoliate from the outside layer 11 first in drawing 2.

[0028] Since die length along the hoop direction of inside layer 12A is made almost equal to the outer-diameter dimension of the inside layer 12, inside layer 12A ends contraction mostly, when the pars intermedia of the hoop direction contacts the siphon of a teeming pump. And after either inside layer 12B or 12C exfoliates from the outside layer 11, and it starts contraction, after contraction of inside layer 12A is completed, and contraction of the inside layer concerned is completed, the inside layer which remained at the end exfoliates from the outside layer 11, and starts contraction.

[0029] While drawing 1 shows the condition that the inside layers 12A-12C of three partitions all ended contraction and all of each pars intermedia of three inside layers 12A-12C come to contact the siphon of a teeming pump at this time, the inside layers 12A, 12B, and 12C of an adjacent partition come to carry out hemihedry [ every ] side contact.

[0030] since the inside layer 12 is contracted in such [ surely ] a gestalt -- contents -- all can almost be poured out now with a teeming pump. In addition, in case the inside layers 12A-12C contract, air flows from the vent 14 prepared in the corresponding part between the outside layer 11 and the inside layers 12A-12C, and contraction of the inside layers 12A-12C is made certainly and smooth.

[0031] Moreover, the inside layers 12A-12C of each partition only contact the siphon of a teeming pump lightly on the dimension and cannot push and bend a siphon. Therefore, a teeming pump can be made to operate normally until contraction of the inside layer 12 does not have a bad influence on actuation of a teeming pump and it pours out the last contents.

[0032] [Gestalt of the 2nd operation] Drawing 4 and drawing 5 are the cross-sectional views of the drum section in the gestalt of operation of the 2nd of the laminating bottle by this invention, drawing 4 shows the condition after the inside layer 12 contracts, and drawing 5 shows the condition before contraction.

[0033] As for the laminating bottle 1 of the gestalt of the 2nd operation, four joints 13 to which the cross section of a drum section is formed in in the shape of an abbreviation rectangle, and joins the outside layer 11 and the inside layer 12 are formed. Four joints 13A, 13B, 13C, and 13D are allotted in four side-faces 2A of a drum section, 2B, 2C, and the center of 2D, and are linearly prolonged along the direction of an axis of the laminating bottle 1. The end of each joint 13 is prolonged at the tip of the cylinder-like opening cylinder part 3, and the other end is prolonged to the center of a pars basilaris ossis occipitalis of a drum section.

[0034] thus, the alienation measured along the hoop direction of two adjacent joints (for example, 13A and 13B) when Joints 13A-13D had been arranged -- a dimension L1 turns into the dimension L2 and this dimension which measured linearly between the two joint 13A concerned and 13B via the shaft center P of the laminating bottle 1. This dimension relation is the same also between joint 13B and 13C, between joint 13C and 13D, or about between joint 13D and 13A.

[0035] In the case of the gestalt of this 2nd operation, the inside layer 12 is divided by Joints 13A-13D at four partitions. Although the number of partitions of the inside layer 12 is different with the gestalt of the 1st operation, and the gestalt of the 2nd operation, the same operation effectiveness as the case of the gestalt of the 1st operation also to the case of the gestalt of the 2nd operation is done so.

[0036] That is, with reduction of the contents held in the inside layer 12, from the outside layer 11, the inside layers 12A, 12B, 12C, and 12D of each partition divided into four carry out sequential exfoliation, and contract.

[0037] Each divided inside layers 12A-12D end contraction mostly, when a part contacts the siphon of a teeming pump

in the middle of the hoop direction. the inside layers 12A, 12B, 12C, and 12D of the partition which adjoins each other while all of a part for each way CHUBU ENGINEERING CORPORATION of four inside layers 12A-12D come to contact the siphon of a teeming pump, when the inside layers 12A-12D all end contraction -- the part -- it comes to carry out the field contact of the comrades mutually.

[0038] since the inside layer 12 is contracted in such [surely] a gestalt -- contents -- all can almost be poured out now with a teeming pump.

[0039] In addition, in case every one vent 14 is formed in the opening cylinder part 3 between each joint 13, respectively and the inside layers 12A-12D contract, air flows from the vent 14 prepared in the corresponding part between the outside layer 11 and the inside layers 12A-12D, and contraction of the inside layers 12A-12D is made certainly and smooth.

[0040] Moreover, the inside layers 12A-12D of each partition only contact the siphon of a teeming pump lightly on the dimension, and cannot push and bend a siphon. Therefore, a teeming pump can be made to operate normally until contraction of the inside layer 12 does not have a bad influence on actuation of a teeming pump and it pours out the last contents.

[0041] The [manufacture approach of a laminating bottle] The laminating bottle 1 in the gestalt of said the operation of each can be manufactured as follows.

[0042] Laminating parison or laminating preforming equipped with the laminated structure corresponding to introduction and the laminating bottle which should be manufactured is cast by means, such as extrusion molding. In case laminating parison or laminating preforming is cast, only a predetermined number covers the overall length, and is prepared in a position, and exfoliation [ layer / an outside layer and / inside ] of the joint prolonged along the direction of an axis is enabled except the joint.

[0043] And this laminating parison or laminating preforming is set to blow molding metal mold, and it casts in a desired bottle configuration by the blow molding method.

[0044] In addition, outside layers are not joined, although inside layers are completely joined when a bottle pars basilaris ossis occipitalis is formed by pinch-off processing. Therefore, if the pars basilaris ossis occipitalis of a bottle is poked with a stick etc. and an impact is added after molding, a slit will be formed between the outside layers and inside layers in the pinch-off section, and the inflow of air will be attained from this slit between an outside layer and an inside layer. Therefore, if it does in this way, even if it does not prepare a vent in an outside layer, contraction of an inside layer is possible.

[0045]

[Example] The outside layer 11 was constituted from polyethylene, the inside layer 12 was constituted from nylon, the outside layer 11 and the inside layer 12 were joined by ADOMA (a trade name, Mitsui Petrochemical Industries, Ltd. make), the joint 13 was formed, and the 1st or the laminating bottle 1 of the gestalt of the 2nd operation was manufactured. The result good in any case was obtained.

[0046] Moreover, in order to make the moisture permeability of the inside layer 12 decrease, the laminating of the ADOMA layer was carried out inside the nylon layer, the inside layer 12 was constituted, and the 1st or the laminating bottle 1 of the gestalt of the 2nd operation was manufactured. The result good in any case was obtained.

[0047]

[Effect of the Invention] the alienation which measured the joint prolonged along the direction of an axis along the hoop direction of two joints which estrange to a hoop direction mutually, prepare three or more in it, and adjoin it mutually according to this invention as explained above -- with a dimension The dimension which measured between the two joints concerned linearly via the shaft center of a laminating bottle by having set it as this dimension mostly Since it becomes possible to pour out to the last the contents held in the laminating bottle and most contents which cannot be poured out can be lost, while being able to use a resource effectively, the outstanding effectiveness of being very economical is done so.

[0048] Moreover, even when the siphon of a teeming pump has been arranged to the shaft center in a laminating bottle by having carried out a dimension setup like the above-mentioned, contraction of an inside layer does not have a bad influence on actuation of a teeming pump, and there is effectiveness of the ability to make a teeming pump operate normally to the last.

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TECHNICAL FIELD

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[Field of the Invention] This invention relates to the laminating bottle which an inside layer exfoliates and contracts from an outside layer with reduction in contents.

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PRIOR ART

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[Description of the Prior Art] There are some which were indicated by JP,4-339759,A by which these people applied previously and application public presentation was already carried out as this kind of a laminating bottle, JP,5-310265,A, etc.

[0003] The laminating of the exfoliation of an inside layer is made possible inside the outside layer, a part of outside layer and inside layer are joined, and this laminating bottle is constituted. Although many things are considered about the installation location of the joint which joins an outside layer and an inside layer, there are some which prepared the joint in a straight line along the direction of an axis of a laminating bottle as the one gestalt.

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EFFECT OF THE INVENTION

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[Effect of the Invention] the alienation which measured the joint prolonged along the direction of an axis in this invention along the hoop direction of two joints which estrange to a hoop direction mutually, prepare three or more in it, and adjoin it mutually as explained above -- with a dimension By having set mostly the dimension which measured between the two joints concerned linearly via the shaft center of a laminating bottle as this dimension, it becomes possible to pour out to the last the contents held in the laminating bottle, and most contents which cannot be poured out can be lost. Therefore, while being able to use a resource effectively, the outstanding effectiveness of being very economical is done so.

[0048] Moreover, even when the siphon of a teeming pump has been arranged to the shaft center in a laminating bottle by having carried out a dimension setup like the above-mentioned, contraction of an inside layer does not have a bad influence on actuation of a teeming pump, and there is effectiveness of the ability to make a teeming pump operate normally to the last.

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 TECHNICAL PROBLEM
 

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[Problem(s) to be Solved by the Invention] Drawing 6 is the cross-sectional view of the laminating bottle 30 which has only one joint 33 linearly prolonged along the direction of an axis. In this case, when the inside layer 32 exfoliates from the outside layer 31 with reduction in contents, exfoliation begins from the part distant from the joint 33. And if contraction of the inside layer 32 advances, the inside layer 32 which exfoliated as shown in drawing 6 will stick to the about 33-joint inside layer 32, and will form closed space 34 and 35 in the both sides of this adhesion part.

[0005] Thus, when closed space 34 and 35 was generated, there were a closed space 34 and a possibility of remaining without carrying out teeming of the contents in 35, and it was uneconomical.

[0006] Moreover, although the opening cylinder part of a laminating bottle is equipped with a teeming pump (not shown) and the siphon of a teeming pump was made to insert into an inside layer from an opening cylinder part with this kind of laminating bottle in many cases, when the inside layer which exfoliated contracted as mentioned above, the inside layer barred push bending and the actuation of a teeming pump with this normal for the siphon, and there was a case where it had a bad influence on teeming of contents.

[0007] This problem is similarly produced, when a hoop direction is countered and two joints linearly prolonged along the direction of an axis are prepared. Thus, it is because exfoliation of an inside layer will begin from an either side, and will advance and both sides will not exfoliate and contract to coincidence, although an inside layer will be carried out 2 \*\*\*\*s if two joints are prepared. Thus, why exfoliation begins only from one side Generally, although it is because thickness deviation of the inside layer is carried out to the hoop direction and it is easier to exfoliate rather than a heavy-gage side from an outside layer a thin meat side, and it is difficult to arrange a joint at equal intervals correctly and a dimension error is produced a little in a hoop direction when preparing two joints in a hoop direction It is because it is easy to exfoliate then from an outside [ one / where the one where hoop direction die length is longer is shorter ] layer.

[0008] This invention is made in view of the trouble of such a Prior art, and it aims at offering the laminating bottle which can pour out contents to the last. Moreover, other purposes of this invention are to obtain the laminating bottle which does not bar normal actuation of a teeming pump.

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MEANS

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[Means for Solving the Problem] This invention adopted the following means, in order to solve said technical problem. In the laminating bottle joined in the joint of the inside layer to which the laminating of the exfoliation of this invention was mutually made possible, and an outside layer to which it has two-layer at least, and a part of this inside layer and outside layer extend along the direction of an axis the alienation measured along the hoop direction of two joints which said joint is mutually estranged to a hoop direction, is prepared in it three or more, and adjoin each other mutually -- with a dimension The dimension which measured between the two joints concerned linearly via the shaft center of a laminating bottle is the laminating bottle characterized by being mostly set as this dimension (it corresponds to claim 1).

[0010] With the laminating bottle of this invention, when an inside layer exfoliates and contracts from an outside layer with reduction in contents, an inside layer is divided into the number and the same number of a joint, exfoliates and is contracted. It is decided by thick distribution of an inside layer, or difference of the hoop direction die length between joints whether exfoliation will begin from which partition of an inside layer, and if contraction of the inside layer of the partition which exfoliated first is completed, exfoliation of another partition will start and exfoliation and contraction will be performed one by one.

[0011] Since the dimension between joints is set up as mentioned above, in the middle of each partition, as for each partition of the inside layer divided by the joint, the section ends contraction, when [ of a laminating bottle ] it arrives at a shaft center mostly, and the contraction beyond this becomes impossible on a dimension.

[0012] Also when the siphon of a teeming pump is allotted to the shaft center of a laminating bottle, the contracted inside layer pushes a siphon and does not bend it.

[0013] It is desirable to prepare at least one vent between the joints of said outside layer, respectively (it corresponds to claim 2). If it does in this way, air can be made to be able to flow certainly between an outside layer and an inside layer from a vent, and an inside layer can be shrunk certainly and smoothly. The installation locations of a vent may be which locations, such as an opening cylinder part of a laminating bottle, a drum section, and a pars basilaris ossis occipitalis.

[0014] When a laminating bottle makes the shape of a cylinder, said joint is prepared in three hoop direction regular intervals (it corresponds to claim 3). When a laminating bottle makes rectangle tubed, said joint is prepared in four hoop direction regular intervals (it corresponds to claim 4).

[0015] <Raw material of this invention> An outside layer can be constituted from high density polyethylene, and an inside layer can be constituted from nylon and can constitute a joint by joining an outside layer and an inside layer by the trade name "ADOMA" for example, by Mitsui Petrochemical Industries, Ltd.

[0016] In addition, when nylon is adopted as an inside layer, moisture permeability of nylon is possible also for carrying out the laminating of the layers ("ADOMA" etc.) which consist of other resin which is rich in gas barrier nature inside nylon, considering as an inside layer, since it is high, and making the moisture permeability of an inside layer decrease.

[0017] However, the raw material of the adhesives for forming a joint, an outside layer, and an inside layer is not restricted to the above-mentioned example.

[0018]

[Embodiment of the Invention] Hereafter, the gestalt of operation of this invention is explained based on the drawing of drawing 5 from drawing 1.

[0019] [Gestalt of the 1st operation] Drawing 3 is an appearance perspective view in the gestalt of operation of the 1st of the laminating bottle by this invention, and drawing 1 and drawing 2 are the cross-sectional views of the drum section.

[0020] The laminating bottle 1 is equipped with the cylinder-like drum section 2 and the opening cylinder part 3 of the shape of a cylinder which stands in a row in the upper part of a drum section 2. The whole carries out the laminating of the outside layer 11 and the inside layer 12, and the laminating bottle 1 is constituted until it results [ from the opening cylinder part 3 ] in the pars basilaris ossis occipitalis 4 of a drum section 2. Although mutually joined in three joints 13A, 13B, and 13C, by parts other than these joint 13, exfoliation of the outside layer 11 and the inside layer 12 is attained only by the outside layer 11 and the inside layer 12 having contacted. Drawing 2 shows the condition before the inside layer 12 exfoliates from the outside layer 11.

[0021] The joint 13 is allotted to three hoop direction regular intervals, each joints 13A, 13B, and 13C were linearly prolonged in band-like along the direction of an axis of the laminating bottle 1 until they resulted [ from the tip of the opening cylinder part 3 ] in the margo inferior of a drum section 2, and it is prolonged to the core of a pars basilaris ossis occipitalis 4.

[0022] Dimensions L1 are  $L1 = \pi D / 3 = 1.05D$ . by the way, the alienation measured along the hoop direction of two adjacent joints (for example, 13A and 13B) when the outer diameter of the inside layer 12 was set to D -- With dimension  $L2 = D$  which measured linearly between the two joints (13A, 13B) concerned via the shaft center P of the laminating bottle 1, this has this dimension mostly. This dimension relation is the same also between joint 13B and 13C or about between joint 13C and 13A.

[0023] Every one vent 14 is formed in the outside layer 11 in the opening cylinder part 3 of the laminating bottle 1 between each joint 13 and 13, respectively. The vent 14 has penetrated only the outside layer 11 and has not penetrated it in the inside layer 12.

[0024] With this laminating bottle 1, it equips with the teeming pump which is not illustrated to the opening cylinder part 3, and the siphon of a teeming pump is inserted into the inside layer 12 from the opening cylinder part 3, a pump rise is carried out and the contents held in the interior of the inside layer 12 are poured out. At this time, it is common to allot [ of the laminating bottle 1 ] the siphon of a teeming pump mostly to a shaft center.

[0025] The inside layer 12 exfoliates and contracts from the outside layer 11 with reduction of the contents in the inside layer 12. By the way, the inside layer 12 is trichotomized by the joint 13 in the hoop direction, and for every divided partition, it sequential-exfoliates and comes to contract it.

[0026] It is decided by thick distribution of the inside layer 12, or the dimension error of a joint 13 and the hoop direction die length between 13 whether exfoliation and contraction will begin from which partition of the inside layer 12, and other partitions do not exfoliate and it does not contract until the partition which exfoliated first completes contraction.

[0027] For example, joint 13B, inside layer 12B located between 13C, joint 13C, and inside layer 12C located among 13A do not exfoliate from the outside layer 11 until this inside layer 12A will end contraction, supposing joint 13A and inside layer 12A located among 13B exfoliate from the outside layer 11 first in drawing 2.

[0028] Since die length along the hoop direction of inside layer 12A is made almost equal to the outer-diameter dimension of the inside layer 12, inside layer 12A ends contraction mostly, when the pars intermedia of the hoop direction contacts the siphon of a teeming pump. And after either inside layer 12B or 12C exfoliates from the outside layer 11, and it starts contraction, after contraction of inside layer 12A is completed, and contraction of the inside layer concerned is completed, the inside layer which remained at the end exfoliates from the outside layer 11, and starts contraction.

[0029] While drawing 1 shows the condition that the inside layers 12A-12C of three partitions all ended contraction and all of each pars intermedia of three inside layers 12A-12C come to contact the siphon of a teeming pump at this time, the inside layers 12A, 12B, and 12C of an adjacent partition come to carry out hemihedry [ every ] side contact.

[0030] since the inside layer 12 is contracted in such [ surely ] a gestalt -- contents -- all can almost be poured out now with a teeming pump. In addition, in case the inside layers 12A-12C contract, air flows from the vent 14 prepared in the corresponding part between the outside layer 11 and the inside layers 12A-12C, and contraction of the inside layers 12A-12C is made certainly and smooth.

[0031] Moreover, the inside layers 12A-12C of each partition only contact the siphon of a teeming pump lightly on the dimension, and cannot push and bend a siphon. Therefore, a teeming pump can be made to operate normally until contraction of the inside layer 12 does not have a bad influence on actuation of a teeming pump and it pours out the last contents.

[0032] [Gestalt of the 2nd operation] Drawing 4 and drawing 5 are the cross-sectional views of the drum section in the gestalt of operation of the 2nd of the laminating bottle by this invention, drawing 4 shows the condition after the inside layer 12 contracts, and drawing 5 shows the condition before contraction.

[0033] As for the laminating bottle 1 of the gestalt of the 2nd operation, four joints 13 to which the cross section of a

drum section is formed in the shape of an abbreviation rectangle, and joins the outside layer 11 and the inside layer 12 are formed. Four joints 13A, 13B, 13C, and 13D are allotted in four side-faces 2A of a drum section, 2B, 2C, and the center of 2D, and are linearly prolonged along the direction of an axis of the laminating bottle 1. The end of each joint 13 is prolonged at the tip of the cylinder-like opening cylinder part 3, and the other end is prolonged to the center of a pars basilaris ossis occipitalis of a drum section.

[0034] thus, the alienation measured along the hoop direction of two adjacent joints (for example, 13A and 13B) when Joints 13A-13D had been arranged -- a dimension L1 turns into the dimension L2 and this dimension which measured linearly between the two joint 13A concerned and 13B via the shaft center P of the laminating bottle 1. This dimension relation is the same also between joint 13B and 13C, between joint 13C and 13D, or about between joint 13D and 13A.

[0035] In the case of the gestalt of this 2nd operation, the inside layer 12 is divided by Joints 13A-13D at four partitions. Although the number of partitions of the inside layer 12 is different with the gestalt of the 1st operation, and the gestalt of the 2nd operation, the same operation effectiveness as the case of the gestalt of the 1st operation also to the case of the gestalt of the 2nd operation is done so.

[0036] That is, with reduction of the contents held in the inside layer 12, from the outside layer 11, the inside layers 12A, 12B, 12C, and 12D of each partition divided into four carry out sequential exfoliation, and contract.

[0037] Each divided inside layers 12A-12D end contraction mostly, when a part contacts the siphon of a teeming pump in the middle of the hoop direction. the inside layers 12A, 12B, 12C, and 12D of the partition which adjoins each other while all of a part for each way CHUBU ENGINEERING CORPORATION of four inside layers 12A-12D come to contact the siphon of a teeming pump, when the inside layers 12A-12D all end contraction -- the part -- it comes to carry out the field contact of the comrades mutually.

[0038] since the inside layer 12 is contracted in such [ surely ] a gestalt -- contents -- all can almost be poured out now with a teeming pump.

[0039] In addition, in case every one vent 14 is formed in the opening cylinder part 3 between each joint 13, respectively and the inside layers 12A-12D contract, air flows from the vent 14 prepared in the corresponding part between the outside layer 11 and the inside layers 12A-12D, and contraction of the inside layers 12A-12D is made certainly and smooth.

[0040] Moreover, the inside layers 12A-12D of each partition only contact the siphon of a teeming pump lightly on the dimension, and cannot push and bend a siphon. Therefore, a teeming pump can be made to operate normally until contraction of the inside layer 12 does not have a bad influence on actuation of a teeming pump and it pours out the last contents.

[0041] The [manufacture approach of a laminating bottle] The laminating bottle 1 in the gestalt of said the operation of each can be manufactured as follows.

[0042] Laminating parison or laminating preforming equipped with the laminated structure corresponding to introduction and the laminating bottle which should be manufactured is cast by means, such as extrusion molding. In case laminating parison or laminating preforming is cast, only a predetermined number covers the overall length, and is prepared in a position, and exfoliation [ layer / an outside layer and / inside ] of the joint prolonged along the direction of an axis is enabled except the joint.

[0043] And this laminating parison or laminating preforming is set to blow molding metal mold, and it casts in a desired bottle configuration by the blow molding method.

[0044] In addition, outside layers are not joined, although inside layers are completely joined when a bottle pars basilaris ossis occipitalis is formed by pinch-off processing. Therefore, if the pars basilaris ossis occipitalis of a bottle is poked with a stick etc. and an impact is added after molding, a slit will be formed between the outside layers and inside layers in the pinch-off section, and the inflow of air will be attained from this slit between an outside layer and an inside layer. Therefore, if it does in this way, even if it does not prepare a vent in an outside layer, contraction of an inside layer is possible.

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[Translation done.]

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3. In the drawings, any words are not translated.

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**EXAMPLE**

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[Example] The outside layer 11 was constituted from polyethylene, the inside layer 12 was constituted from nylon, the outside layer 11 and the inside layer 12 were joined by ADOMA (a trade name, Mitsui Petrochemical Industries, Ltd. make), the joint 13 was formed, and the 1st or the laminating bottle 1 of the gestalt of the 2nd operation was manufactured. The result good in any case was obtained.

[0046] Moreover, in order to make the moisture permeability of the inside layer 12 decrease, the laminating of the ADOMA layer was carried out inside the nylon layer, the inside layer 12 was constituted, and the 1st or the laminating bottle 1 of the gestalt of the 2nd operation was manufactured. The result good in any case was obtained.

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[Translation done.]

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DESCRIPTION OF DRAWINGS

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[Brief Description of the Drawings]

[Drawing 1] It is the cross-sectional view showing the inside layer contraction back of the laminating bottle in the gestalt of operation of the 1st of this invention.

[Drawing 2] It is the cross-sectional view showing inside layer contraction before of the laminating bottle in the gestalt of operation of the 1st of this invention.

[Drawing 3] It is the appearance perspective view of the laminating bottle in the gestalt of operation of the 1st of this invention.

[Drawing 4] It is the cross-sectional view showing the inside layer contraction back of the laminating bottle in the gestalt of operation of the 2nd of this invention.

[Drawing 5] It is the cross-sectional view showing inside layer contraction before of the laminating bottle in the gestalt of operation of the 2nd of this invention.

[Drawing 6] It is the cross-sectional view showing the inside layer contraction back in the conventional laminating bottle.

[Description of Notations]

- 1 Laminating Bottle
- 11 Outside Layer
- 12, 12A-12D Inside layer
- 13, 13A-13D Joint
- 14 Vent

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[Translation done.]

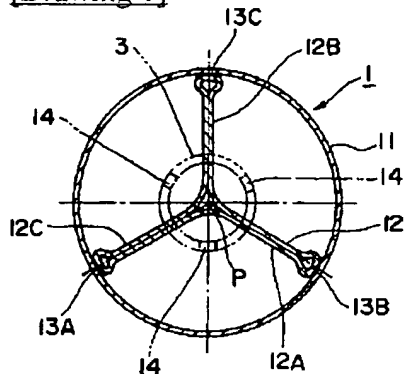
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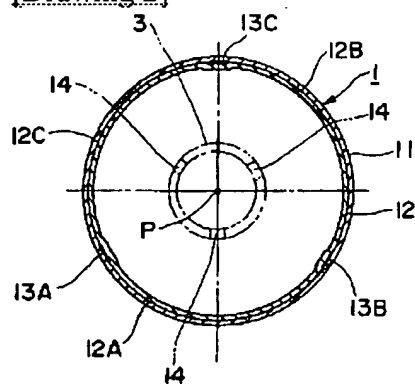
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## DRAWINGS

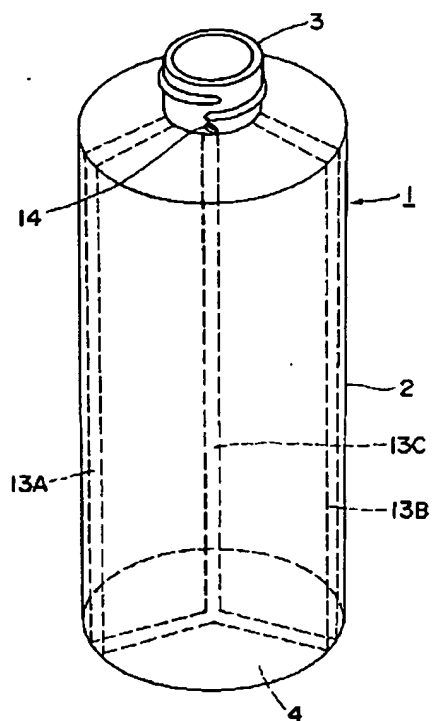
[Drawing 1]



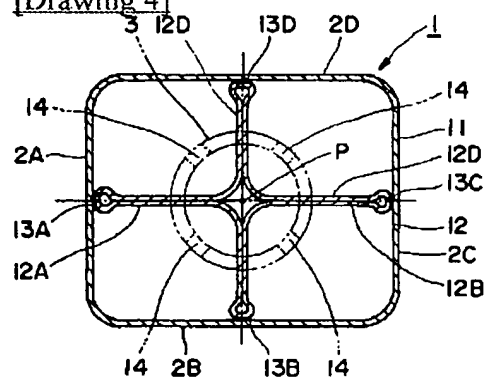
[Drawing 2]



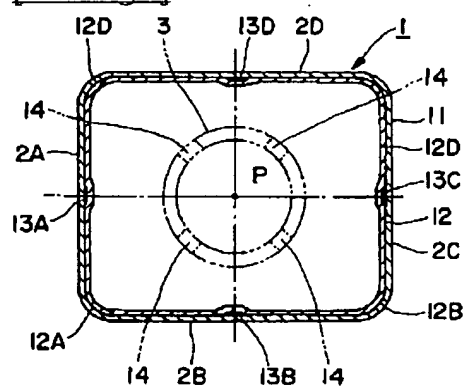
[Drawing 3]



[Drawing 4]

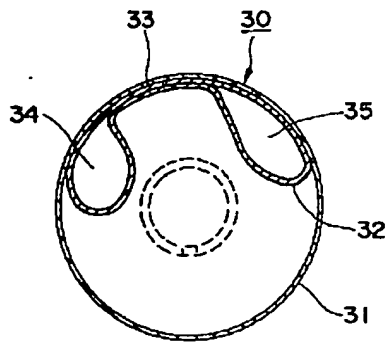


[Drawing 5]



[Drawing 6]





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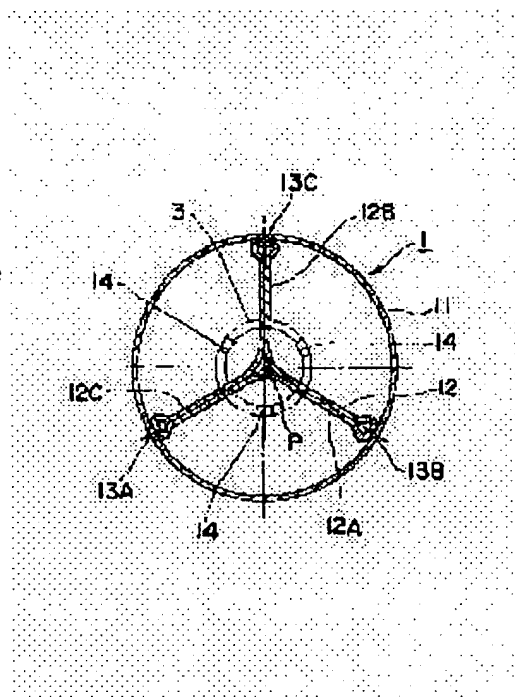
(72)Inventor : KISHI TAKAO

## (54) LAMINATED BOTTLE

### (57)Abstract:

**PROBLEM TO BE SOLVED:** To eliminate a residue of contents which is not extractable, in a laminated bottle whose inner layer peels off its outer layer and shrinks as the contents decrease.

**SOLUTION:** The outer layer 11 and inner layer 12 of a cylindrical laminated bottle 1 are joined at three joint parts 13A-13C, and they are peelable from each other in other areas than the joint parts 13A-13C. The joint parts 13A-13C are axially provided along the entire length of the laminated bottle 1, and they are arranged at regular intervals circumferentially. The three separate inner layers 12A-12C obtained by the joint parts 13A-13C end shrinking when their circumferential central parts reach the center of the axis of the laminated bottle 1.



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22.11.2002

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